

Amendments to the Claims

Please amend claims 148, 152, 155 and 157.

Claims 150 and 151 have been canceled.

Claims 160-170 have been added.

The listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claims 1-147. (Canceled)

148. (Currently amended) An apparatus configured as a light emitting diode dental curing light source for curing composite materials, said apparatus comprising:

- a) a plurality of light emitting diodes being capable of emitting light when supplied with adequate electrical current, each of the plurality of light emitting diodes having a bottom surface configured as a heat transfer surface;
- b) a first substrate portion upon which the bottom surface of each of said plurality of light emitting diodes are mounted, said first substrate portion being electrically conductive and thermally conductive;
- c) a second substrate portion thermally connected to the first substrate portion, said second substrate portion being thermally conductive and electrically insulating;
- d) a heat pipe capable of transferring heat from one location to another, said heat pipe having a first end portion and a second end portion, said first end portion being thermally connected to the second substrate portion;
- e) a heat sink constructed of a material capable of dissipating heat into a heat dissipation environment, said heat sink being thermally coupled to the second end portion of the heat pipe; and
- f) control circuitry capable of controlling electrical current transmission to said plurality of light emitting diodes in order to control light production by said plurality of light emitting diodes;

wherein heat generated by the plurality of light emitting diodes is transmitted to the heat sink via the first substrate portion, the second substrate portion and the heat pipe.

149. (Previously presented) The apparatus according to claim 148, wherein the first substrate portion is configured with a plurality of cups therein, at least some of the cups being sized and configured to have one or more light emitting diodes positioned therein.
150. (Canceled)
151. (Canceled)
152. (Currently amended) The apparatus according to claim ~~151~~148, wherein the bottom surface is further configured as an electrical contact surface.
153. (Previously presented) The apparatus according to claim 148, comprising a plurality of first substrate portions, each of said plurality of first substrate portions having one or more light emitting diodes mounted thereon, said plurality of first substrate portions connected to the second substrate portion.
154. (Previously presented) The apparatus according to claim 148, further comprising an optical element optically coupled to the plurality of light emitting diodes.
155. (Currently amended) The apparatus according to claim 154, wherein the optical element is selected from the group comprising a lens, a holographic film, an array of lenses, an array of lenses and holographic films, an array of holographic films, a graded refractive index lens, an array of graded refractive index lenses, an optical window and an array of optical windows.
156. (Previously presented) The apparatus according to claim 148, wherein the first substrate portion is coated with an optically reflective material.

157. (Currently amended) The apparatus according to claim ~~148~~149, wherein each of the plurality of cups have angled walls, curved walls, square walls or a combination thereof.
158. (Previously presented) The apparatus according to claim 148, wherein the plurality of light emitting diodes are comprised of light emitting diodes of different wavelengths.
159. (Previously presented) A method of manufacture of an apparatus configured as a light emitting diode dental curing light source for curing composite materials, the method comprising:
- a) thermally mounting a plurality of light emitting diodes onto a first substrate portion, said first substrate portion being thermally conductive and electrically conductive;
 - b) electrically connecting each of the plurality of light emitting diodes to the first substrate portion;
 - c) thermally connecting the first substrate portion to a second substrate portion, said second substrate portion being thermally conductive and electrically insulating;
 - d) thermally connecting the second substrate portion to a heat pipe;
 - e) thermally connecting the heat pipe to a heat sink.
160. (New) The apparatus according to claim 148, wherein the first substrate portion has a top surface and wherein the top surface is a copper sheet.
161. (New) The apparatus according to claim 160, wherein the copper sheet is divided into electrically isolated portions, wherein each electrically isolated portion has one or more light emitting diodes mounted thereon.
162. (New) The apparatus according to claim 148, wherein the plurality of light emitting diodes are optically coupled to a light guide or a single optical fiber or a bundle of optical fibers.

163. (New) The apparatus according to claim 149, wherein the plurality of cups are formed in a dish shape.
164. (New) The apparatus according to claim 148, wherein the heat sink is cooled by one or a combination of air, water and a phase change heat transfer material.
165. (New) The apparatus according to claim 148, wherein the first substrate portion is configured with one or more trenches therein.
166. (New) The apparatus according to claim 149, wherein the first substrate portion is configured with one or more trenches therein.
167. (New) The apparatus according to claim 149, wherein at least some of the cups being sized and configured to have multiple light emitting diodes positioned therein.
168. (New) The apparatus according to claim 149, wherein the plurality of cups are machined or stamped.
169. (New) The apparatus according to claim 149, wherein one or more of the plurality of cups have a shape selected from the group comprising, parabolic, elliptical, hemispherical and pyramidal.
170. (New) The apparatus according to claim 149, wherein one or more of the plurality of cups have a shape configured to reflect the emitted light to a specific focal point.